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SHORTER ARTICLES AND DISCUSSION

NABOURS'S GRASSHOPPERS, MULTIPLE ALLELOMORPHISM, LINKAGE AND MISLEADING TERMINOLOGIES IN GENETICS

IN a review of Nabours's breeding experiments with grasshoppers,[1] Mr. Dexter makes a distinction between an interpretation of Nabours's and his own, where I fail to see a difference except in terminology. This is so typical of much recent Mendelian work that I am tempted to call attention to it.

Nabours describes a cross between a female with characters *BI* and a male with characters *CE* and comments on the production of an individual with characters *BEI*. He says, as quoted, that the "female parent gave at least one gamete containing the factors for the patterns of both her parents (*B* and *I*) and that this double character gamete was fertilized by one of the *E* gametes which came from the *CE* male."

Dexter prefers to call the supposed exceptional *BI* gamete of Nabours *BceI*, and the supposed *E* sperm which fertilized it *bcEi*, stating that Nabours's terminology would involve multiple allelomorphism, his own linkage. (Nabours uses, I think, neither expression.) Now what is the difference between the two interpretations? Is it anything but verbal? Is there anything significant in the small letters which Dexter has added to Nabours's formulæ? If so, what is their significance? Do they mean any more than the extra zeros in the expression 1.000 as compared with 1.0?

Dexter proposes an experimental test, that the cross be repeated. "If then *BEI* forms should appear again and in these when mated to other forms the factors *B* and *I* should be found to stay together to the same extent as they before separated, it would show that close linkage, rather than multiple allelomorphism explains this particular instance." How would it show it? If we take Nabours's assumption that *B* and *I* have exceptionally gone into a single gamete and formed with *E* a zygote *BI.E*, would it be counter to his assumption that they should subsequently hang together and that gametes should arise *BI* and *E*, respectively? Would adding a few small letters to the formulæ alter the case, changing it from multiple allelomorphism to linkage? It seems to me that this is one more case in which a fallacious conclusion is reached in consequence of using small letters for *absent* characters in Mendelian formulæ. Professor James Wilson has pointed out others.

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[1] AM. NAT., May, 1914.

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